B2

$f_{n+1,m+2}$, $f_{n+1,m+4}$, $f_{n+2,m+1}$, $f_{n+2,m+3}$, $f_{n+3,m+2}$, $f_{n+3,m+4}$, $f_{n+4,m+1}$, and $f_{n+4,m+3}$ are green pass filters;

$f_{n+1,m+3}$ and $f_{n+3,m+1}$ are red pass filters; and

$f_{n+2,m+2}$, $f_{n+2,m+4}$, $f_{n+4,m+2}$, and $f_{n+4,m+4}$ are infrared pass filters.

4. (Amended) An imaging system comprising:

a color filter array comprising an array of pass filters f, where subscripts on f denote row-column position, wherein for some indices n and m:

$f_{n+1,m+1}$ and $f_{n+3,m+3}$ are blue pass filters;

$f_{n+1,m+2}$, $f_{n+1,m+4}$, $f_{n+2,m+1}$, $f_{n+2,m+3}$, $f_{n+3,m+2}$, $f_{n+3,m+4}$, $f_{n+4,m+1}$, and $f_{n+4,m+3}$ are green pass filters;

$f_{n+1,m+3}$ and $f_{n+3,m+1}$ are red pass filters;

$f_{n+2,m+2}$, $f_{n+2,m+4}$, $f_{n+4,m+2}$, and $f_{n+4,m+4}$ are infrared pass filters; and

an array of pixel sensors responsive to electromagnetic radiation propagating through the color filter array, wherein for some range of position indices u and v, a pixel sensor at position (u,v) provides an output signal $X(u,v)$ indicative of electromagnetic radiation propagating through the color filter array and impinging upon the pixel sensor at position (u,v).

5. (Amended) The imaging system as set forth in claim 4, further comprising

at least one processor to provide interpolated color component signals $\hat{X}_i(u,v)$, i = 1, 2, 3, where i = 1 denotes red, i = 2 denotes green, and i = 3 denotes blue, wherein for each i = 1, 2, 3; if $X(u,v)$ is an output signal of a color i pixel sensor, then $\hat{X}_i(u,v) = X(u,v)$, and if $X(u,v)$ is an output signal of an IR pixel sensor or a color j pixel sensor where j = 1 denotes red, j = 2 denotes green, and j = 3 denotes blue such that $j \neq i$, then $\hat{X}_i(u,v)$ is an average of the output signals of nearest neighbor color i pixel sensors.

B2 cont.

6. (Amended) The imaging system as set forth in claim 4, further comprising

a memory storage device, wherein stored in the memory storage device are instructions to process interpolated color component signals $\hat{X}_i(u,v)$, i = 1, 2, 3, where i = 1 denotes red, i = 2 denotes green, and i = 3 denotes blue, wherein for each i = 1, 2, 3; if $X(u,v)$ is an output signal of a color i pixel sensor, then $\hat{X}_i(u,v) = X(u,v)$, and if $X(u,v)$ is an output signal of an IR pixel sensor or a color j pixel sensor where j = 1 denotes red, j = 2 denotes green, and j = 3 denotes blue such that $j \neq i$, then $\hat{X}_i(u,v)$ is an average of the output signals of nearest neighbor color i pixel sensors.

7. (Amended) A method to interpolate color component signals, comprising:

providing a color filter array comprising

a first row of pass filters, comprising, in order, blue, green, red, and green pass filters;

a second row of pass filters, comprising, in order, green, infrared, green, and infrared pass filters, wherein the second row of pass filters is adjacent to the first row of pass filters so that the blue pass filter of the first row is adjacent to the first green pass filter of the second row;

a third row of pass filters, comprising, in order, red, green, blue, and green pass filters, wherein the first green pass filter of the second row is adjacent to the red pass filter of the third row; and

a fourth row of pass filters, comprising, in order, green, infrared, green, and infrared pass filters, wherein the red pass filter of the third row is adjacent to the first green pass filter of the fourth row;

providing an array of pixel sensors responsive to electromagnetic radiation propagating through the color filter array, wherein for some range of position indices u and v, a pixel sensor at position (u,v) provides an output signal $X(u,v)$ indicative of electromagnetic radiation propagating through the color filter array and impinging upon the pixel sensor at position (u,v); and

interpolating to provide interpolated color component signals $\hat{X}_i(u,v)$, i = 1, 2, 3, where i = 1 denotes red, i = 2 denotes green, and i = 3 denotes blue, wherein for each i =

1, 2, 3; if $X(u,v)$ is an output signal of a color i pixel sensor, then $\hat{X}_i(u,v) = X(u,v)$, and if $X(u,v)$ is an output signal of an IR pixel sensor or a color j pixel sensor where j = 1 denotes red, j = 2 denotes green, and j = 3 denotes blue such that $j \neq i$, then $\hat{X}_i(u,v)$ is an average of the output signals of nearest neighbor color i pixel sensors.

B2 cont.

8. (Amended) A method to interpolate color component signals, comprising:

providing a color filter array comprising

a color filter array comprising an array of pass filters f, where subscripts on f denote row-column position, wherein for some indices n and m:

$f_{n+1,m+1}$ and $f_{n+3,m+3}$ are blue pass filters;

$f_{n+1,m+2}, f_{n+1,m+4}, f_{n+2,m+1}, f_{n+2,m+3}, f_{n+3,m+2}, f_{n+3,m+4}, f_{n+4,m+1}$, and $f_{n+4,m+3}$ are green pass filters;

$f_{n+1,m+3}$ and $f_{n+3,m+1}$ are red pass filters; and

$f_{n+2,m+2}, f_{n+2,m+4}, f_{n+4,m+2}$, and $f_{n+4,m+4}$ are infrared pass filters;

providing an array of pixel sensors responsive to electromagnetic radiation propagating through the color filter array, wherein for some range of position indices u and v, a pixel sensor at position (u,v) provides an output signal $X(u,v)$ indicative of electromagnetic radiation propagating through the color filter array and impinging upon the pixel sensor at position (u,v); and

interpolating to provide interpolated color component signals $\hat{X}_i(u,v)$, i = 1, 2, 3, where i = 1 denotes red, i = 2 denotes green, and i = 3 denotes blue, wherein for each i = 1, 2, 3; if $X(u,v)$ is an output signal of a color i pixel sensor, then $\hat{X}_i(u,v) = X(u,v)$, and if $X(u,v)$ is an output signal of an IR pixel sensor or a color j pixel sensor where j = 1 denotes red, j = 2 denotes green, and j = 3 denotes blue such that $j \neq i$, then $\hat{X}_i(u,v)$ is an average of the output signals of nearest neighbor color i pixel sensors.

B2 conc'd

sub C2

9. (Twice Amended) A color filter array comprising a unit array, the unit array having yellow, magenta, cyan and infrared pass filters in relative numerical proportions 4:1:1:2, respectively.

B3

11. (Amended) A color filter array comprising an array of pass filters $f_{i,j}$, where subscripts on f denote row-column position, wherein for some indices n and m:

$f_{n+1,m+1}$ and $f_{n+3,m+3}$ are cyan pass filters;

$f_{n+1,m+2}$, $f_{n+1,m+4}$, $f_{n+2,m+1}$, $f_{n+2,m+3}$, $f_{n+3,m+2}$, $f_{n+3,m+4}$, $f_{n+4,m+1}$, and $f_{n+4,m+3}$ are yellow pass filters;

$f_{n+1,m+3}$ and $f_{n+3,m+1}$ are magenta pass filters; and

$f_{n+2,m+2}$, $f_{n+2,m+4}$, $f_{n+4,m+2}$, and $f_{n+4,m+4}$ are infrared pass filters.

12. (Amended) An imaging system comprising:

a color filter array comprising an array of pass filters f, where subscripts on f denote row-column position, wherein for some indices n and m:

$f_{n+1,m+1}$ and $f_{n+3,m+3}$ are cyan pass filters;

$f_{n+1,m+2}$, $f_{n+1,m+4}$, $f_{n+2,m+1}$, $f_{n+2,m+3}$, $f_{n+3,m+2}$, $f_{n+3,m+4}$, $f_{n+4,m+1}$, and $f_{n+4,m+3}$ are yellow pass filters;

$f_{n+1,m+3}$ and $f_{n+3,m+1}$ are magenta pass filters;

$f_{n+2,m+2}$, $f_{n+2,m+4}$, $f_{n+4,m+2}$, and $f_{n+4,m+4}$ are infrared pass filters; and

an array of pixel sensors responsive to electromagnetic radiation propagating through the color filter array, wherein for some range of position indices u and v, a pixel sensor at position (u,v) provides an output signal $X(u,v)$ indicative of electromagnetic radiation propagating through the color filter array and impinging upon the pixel sensor at position (u,v).

13. (Amended) The imaging system as set forth in claim 12, further comprising

at least one processor to provide interpolated color component signals $\hat{X}_i(u,v)$, i = 1, 2, 3, where i = 1 denotes magenta, i = 2 denotes yellow, and i = 3 denotes cyan,

B3 cont.

wherein for each $i = 1, 2, 3$; if $X(u,v)$ is an output signal of a color i pixel sensor, then $\hat{X}_i(u,v) = X(u,v)$, and if $X(u,v)$ is an output signal of an IR pixel sensor or a color j pixel sensor where $j = 1$ denotes magenta, $j = 2$ denotes yellow, and $j = 3$ denotes cyan such that $j \neq i$, then $\hat{X}_i(u,v)$ is an average of the output signals of nearest neighbor color i pixel sensors.

14. (Amended) The imaging system as set forth in claim 12, further comprising

a memory storage device, wherein stored in the memory storage device are instructions to process interpolated color component signals $\hat{X}_i(u,v)$, $i = 1, 2, 3$, where $i = 1$ denotes magenta, $i = 2$ denotes yellow, and $i = 3$ denotes cyan, wherein for each $i = 1, 2, 3$; if $X(u,v)$ is an output signal of a color i pixel sensor, then $\hat{X}_i(u,v) = X(u,v)$, and if $X(u,v)$ is an output signal of an IR pixel sensor or a color j pixel sensor where $j = 1$ denotes magenta, $j = 2$ denotes yellow, and $j = 3$ denotes cyan such that $j \neq i$, then $\hat{X}_i(u,v)$ is an average of the output signals of nearest neighbor color i pixel sensors.

15. (Amended) A method to interpolate color component signals, comprising:

providing a color filter array comprising

a first row of pass filters, comprising, in order, cyan, yellow, magenta, and yellow pass filters;

a second row of pass filters, comprising, in order, yellow, infrared, yellow, and infrared pass filters, wherein the second row of pass filters is adjacent to the first row of pass filters so that the cyan pass filter of the first row is adjacent to the first yellow pass filter of the second row;

a third row of pass filters, comprising, in order, magenta, yellow, cyan, and yellow pass filters, wherein the first yellow pass filter of the second row is adjacent to the magenta pass filter of the third row; and

a fourth row of pass filters, comprising, in order, yellow, infrared, yellow, and infrared pass filters, wherein the magenta pass filter of the third row is adjacent to the first yellow pass filter of the fourth row;

B3 cont.

providing an array of pixel sensors responsive to electromagnetic radiation propagating through the color filter array, wherein for some range of position indices u and v, a pixel sensor at position (u,v) provides an output signal $X(u,v)$ indicative of electromagnetic radiation propagating through the color filter array and impinging upon the pixel sensor at position (u,v); and

interpolating to provide interpolated color component signals $\hat{X}_i(u,v)$, $i = 1, 2, 3$, where $i = 1$ denotes magenta, $i = 2$ denotes yellow, and $i = 3$ denotes cyan, wherein for each $i = 1, 2, 3$; if $X(u,v)$ is an output signal of a color i pixel sensor, then $\hat{X}_i(u,v) = X(u,v)$, and if $X(u,v)$ is an output signal of an IR pixel sensor or a color j pixel sensor where $j = 1$ denotes magenta, $j = 2$ denotes yellow, and $j = 3$ denotes cyan such that $j \neq i$, then $\hat{X}_i(u,v)$ is an average of the output signals of nearest neighbor color i pixel sensors.

16. (Amended) A method to interpolate color component signals, comprising:

providing a color filter array comprising

a color filter array comprising an array of pass filters f, where subscripts on f denote row-column position, wherein for some indices n and m:

$f_{n+1,m+1}$ and $f_{n+3,m+3}$ are cyan pass filters;

$f_{n+1,m+2}$, $f_{n+1,m+4}$, $f_{n+2,m+1,}$ $f_{n+2,m+3}$, $f_{n+3,m+2}$, $f_{n+3,m+4}$, $f_{n+4,m+1}$, and $f_{n+4,m+3}$ are yellow pass filters;

$f_{n+1,m+3}$ and $f_{n+3,m+1}$ are magenta pass filters; and

$f_{n+2,m+2}$, $f_{n+2,m+4}$, $f_{n+4,m+2}$, and $f_{n+4,m+4}$ are infrared pass filters;

providing an array of pixel sensors responsive to electromagnetic radiation propagating through the color filter array, wherein for some range of position indices u and v, a pixel sensor at position (u,v) provides an output signal $X(u,v)$ indicative of electromagnetic radiation propagating through the color filter array and impinging upon the pixel sensor at position (u,v); and

interpolating to provide interpolated color component signals $\hat{X}_i(u,v)$, $i = 1, 2, 3$, where $i = 1$ denotes magenta, $i = 2$ denotes yellow, and $i = 3$ denotes cyan, wherein for